



1st SEM. 2004/2005

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UNIVERSITY OF SWAZILAND

FINAL EXAMINATION PAPER

**PROGRAMME: BACHELOR OF SCIENCE IN AGRICULTURE -
CROP PRODUCTION
BACHELOR OF SCIENCE IN AGRICULTURE -
HORTICULTURE
BACHELOR OF SCIENCE IN AGRICULTURAL EDUCATION**

COURSE CODE: CP 402

TITLE OF PAPER: CROP PHYSIOLOGY

TIME ALLOWED: TWO (2) HOURS

**INSTRUCTION: ANSWER FOUR (4) QUESTIONS. ANSWER
QUESTION 1 AND ANY OTHER THREE [3]
QUESTIONS.**

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BY THE INVIGILATOR.**

**INSTRUCTIONS: ANSWER FOUR [4] QUESTIONS. ANSWER QUESTION 1
AND ANY OTHER THREE [3] QUESTIONS.**

**QUESTION 1
(THIS QUESTION IS COMPULSORY)**

- (a) What is an essential element? **(5 marks)**
- (b) Describe two main symptoms of phosphorus deficiency in a named cereal crop. **(4 marks)**
- (c) Explain why the symptoms described in (a) above are observed in a certain part of the plant, and not in other parts? **(4 marks)**
- (d) Describe one major symptom of calcium deficiency in a named crop plant. **(2 marks)**
- (e) Why is the symptom described in (d) above observed in a certain part of the plant? **(4 marks)**
- (f) Briefly describe one symptom of sulphur deficiency in a crop. **(4 marks)**
- (g) Name five micronutrients considered as essential to plants. **(10 marks)**
- (h) Differentiate between the symptoms of nitrogen deficiency and those of potassium deficiency. **(5 marks)**
- (i) How would you remedy the deficiency of potassium in a cereal field? **(2 marks)**

[40 marks]

QUESTION 2

- (a) Using specific examples, discuss crop canopy development in a situation that a legume, cereal or a mixture of cereals and legumes is planted on a farm.
- (b) Show how a crop's canopy can be manipulated for improved crop yields.

[20 marks]

QUESTION 3

- (a) What is the difference between transpiration and evapotranspiration? **(5 marks)**
- (b) What is the significance of transpiration in agriculture? **(5 marks)**
- (c) Explain the dilemma of terrestrial plants? **(5 marks)**
- (d) What is the difference between transpiration and guttation? **(5 marks)**

[20 marks]

QUESTION 4

Relying on your knowledge of Crop Physiology, explain in detail **how** you would solve the problems posed by the following circumstances:

- a. You need ripe bananas for use at a wedding party. However, you only found unripe, mature bananas in the market. You have one week to make the unripe banana ready for use at the party. **Explain** what you would do to make the bananas ready for the party. What would be the major difference between your bananas and the ripe ones that you could have bought in the market? **(5 marks)**
- b. You have five mango trees in your homestead. None of the trees flowers every year. However, every other year, each tree flowers profusely, but only bears a few miserable-looking fruits at the end of the harvesting season. Explain what you would do to make the trees bear **more fruits**, and also flower **every year**. **(5 marks)**
- c. Because your uncle learnt that you studied Crop physiology, he awards you a E50,000.00-contract in his new Company, "Swaziland Horticultural Supplies Unlimited". The company wants its clients to see a model hedge as soon as the company premises are open for business. You are to grow a *Hibiscus* hedge around the perimeter of the company premises within two months to allow a Government Minister to come and open the new Company. How would you make the Hibiscus plants to establish quickly and be ready for the opening ceremony? **(5 marks)**

d. You are employed by an Institution that has very tall plants in the hedge around the premises. Apart from frequent trimming of the hedge, what would you do to make the hedge retain a short appearance? **(5 marks)**

[20 marks]

QUESTION 5

(a) What is seed dormancy? **(5 marks)**

(b) List and discuss five methods of breaking seed dormancy. **(15 marks)**

[20 marks]